Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) Data processing device for performing a reconstruction of ~~CSCT~~ coherent-scatter computed tomography (CSCT) data, ~~wherein the CSCT data comprises a spectrum acquired by means of an energy resolving detector element,~~ the data ~~procession~~ processing device comprising:

a detector comprising an energy resolving detector element positioned offset from a primary radiation path and a scintillator detector element positioned along the primary radiation path, wherein the energy resolving detector element in configured to acquire a spectrum;

a memory for storing the CSCT data; and

a data processor for performing a filtered back-projection, wherein the data processor is adapted to perform the following operation: determining a wave-vector transfer by using the spectrum; determining a reconstruction volume using the wave-vector transfer and data from the scintillator detector element; wherein a dimension of the reconstruction volume is determined by the wave-vector transfer, wherein the

wave vector transfer represents curved lines in the reconstruction volume; and performing a filtered back-projection along the curved lines in the reconstruction volume.

2. (Original) The data processing device of claim 1, wherein the spectrum is acquired during a circular acquisition where a source of radiation is rotated around an object of interest in a rotation plane.

3. (Original) The data processing device of claim 2, wherein the reconstruction volume is furthermore determined by two linear independent vectors of the rotation plane.

4. (Original) The data processing device of claim 1, wherein the energy resolving detector is arranged such that it measures a scatter radiation scattered by an object of interest; wherein the CSCT data further comprises information with respect to a primary radiation attenuated by the object of interest; and wherein a preprocessing is performed to correct for an attenuation contribution.

5. (Currently amended) A ~~CSCT~~ coherent-scatter computed

tomography (CSCT) apparatus for examination of an object of interest, the CSCT apparatus comprising: a detector unit with an x-ray source ~~and~~, a scatter radiation detector and a scintillator detector; wherein the detector unit is rotatable around a rotational axis extending through an examination area for receiving the object of interest; wherein the x-ray source generates a fan-shaped x-ray beam adapted to penetrate the object of interest in the examination area in a slice plane; wherein the scatter radiation detector is arranged at the detector unit opposite to the x-ray source with an offset with respect to the slice plane in a direction parallel to the rotational axis and wherein the scintillator detector is arranged at the detector unit opposite to the x-ray source in the slice plane; wherein the scatter radiation detector includes a first detector line with a plurality of first detector elements arranged in a line; wherein the plurality of first detector elements are energy-resolving detector elements; a data processor for performing a filtered back-projection on first readouts of the scatter radiation detector, wherein the data processor is adapted to perform the following operation: determining a wave-vector transfer by using the first readouts; determining a reconstruction volume using the wave-vector transfer and data from the

scintillator detector; wherein a dimension of the reconstruction volume is determined by the wave-vector transfer; wherein the wave-vector transfer represents curved lines in the reconstruction volume; and performing a filtered back-projection along the curved lines in the reconstruction volume.

6. (Currently amended) The CSCT apparatus according to claim 5, wherein the scatter radiation detector is arranged at the detector unit opposite to the x-ray source parallel to the slice plane and out of the slice plane with such an offset along the rotational axis such that the scatter radiation detector is arranged for receiving a scatter radiation scattered from the object of interest, and wherein the ~~CSCT apparatus further comprises: a primary radiation detector; wherein the primary radiation detector is arranged at the detector unit opposite to the x ray source in the slice plane for receiving~~scintillator detector is configured to receive a primary radiation attenuated by the object of interest; and wherein the data processor performs a preprocessing to correct for an attenuation contribution by using second readouts of the ~~primary radiation~~ scintillator detector.

7. (Original) The CSCT apparatus according to claim 5, wherein the reconstruction volume is furthermore determined by two linear independent vectors of the rotation plane and a wave-vector transfer dimension.

8. (Currently amended) Method of performing a reconstruction of ~~CSCT~~ coherent-scatter computed tomography (CSCT) data, wherein the CSCT data comprises a spectrum acquired by means of an energy resolving detector element, the method comprising the steps of: determining a wave-vector transfer by using ~~the~~ a spectrum determined using an energy resolving detector positioned offset from a primary radiation path; determining a reconstruction volume using the wave-vector transfer and data from a scintillator detector positioned along the primary radiation path; and rendering the reconstruction volume; wherein a dimension of the reconstruction volume is determined by the wave-vector transfer, wherein the wave-vector transfer represents curved lines in the reconstruction volume; and performing a filtered back-projection along the curved lines in the reconstruction volume.

9. (Original) The method of claim 8, wherein the spectrum is acquired during a circular acquisition where a source of radiation is rotated around an object of interest in a rotation plane.

10. (Original) The method of claim 9, wherein the reconstruction volume is furthermore determined by two linear independent vectors of the rotation plane.

11. (Currently amended) The method of claim 8, wherein the energy resolving detector is arranged such that it measures a scatter radiation scattered by an object of interest; wherein the CSCT data further comprises information with respect to a primary radiation attenuated by the object of interest <u>detected by the scintillator detector</u>; and wherein a preprocessing is performed to correct for an attenuation contribution.

12. (currently amended) The method of claim 8, further comprising the steps of: energizing an x-ray source such that it generates a fan-shaped x-ray beam which penetrates the object of interest in an examination area in a slice plane; performing an integral energy measurement of a scatter

radiation by means of ~~a scatter radiation~~energy resolving detector with a first detector line with a plurality of first energy-resolving detector elements arranged in a line; reading-out the energy measurement from the scatter radiation detector; and rotating the x-ray source and the ~~scatter radiation~~energy resolving detector around a rotational axis extending through an examination area containing the object of interest.

13. (Currently amended) Computer program stored on a computer readable medium for a data processor for performing a reconstruction of ~~CSCT~~ coherent-scatter computed tomography (CSCT) data, wherein the CSCT data comprises a spectrum acquired by means of an energy resolving detector element positioned offset from a primary radiation path, wherein the computer program causes the data processor to perform the following operation: determining a wave-vector transfer by using the spectrum; determining a reconstruction volume using the wave-vector transfer and data from a scintillator detector positioned along the primary radiation path; wherein a dimension of the reconstruction volume is determined by the wave-vector transfer, wherein the wave-vector transfer represents curved lines in the reconstruction volume; and

performing a filtered back-projection along the curved lines in the reconstruction volume.